JOURNAL OF APPLIED BEHAVIOR ANALYSIS 1986, 19, 13–22 NUMBER 1 (SPRING 1986)

MAINTENANCE FACTORS IN COERCIVE MOTHER-CHILD INTERACTIONS: THE COMPLIANCE AND PREDICTABILITY HYPOTHESES

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Two stimulus control processes by which some parent-child dyads occasionally escalate their aversive exchanges into progressively more coercive interactions are described. The compliance hypothesis suggests that aversive actions have instructional properties for the dyad and that parent compliance with such child instructions maintains behavior chains of increasing aversiveness. The predictability hypothesis suggests that social interactions are most likely to function as aversive stimuli in the dyad when delivered in unpredictable fashion by either party and that responses instrumental in reducing dyadic unpredictability maintain aversive behavior chains. Expectations derived from both hypotheses are evaluated in a series of correlational analyses of mother-child interactions obtained in extended baseline observations of three dyads seeking psychological help for severe interactional problems. Results provide tentative support for the predictability hypothesis and suggest important avenues of further research.

DESCRIPTORS: compliance, predictability, coercion, mother-child dyad, reinforcement

Parent-child relationships marked by unusually frequent exchanges of aversive behavior may predict the development of two adverse outcomes for the child: parental abuse and the child's abuse of others. Abused children are more likely than are matched controls to engage their mothers in coercive interactions (Burgess & Conger, 1978; Reid, Taplin, & Lorber, 1981) and to display aggressive behavior toward siblings, peers, or other adults (George & Main, 1979; Lewis, Shanok, Pincus, & Glaser, 1979; Snyder, 1977).

These findings suggest that a causal link might exist between day to day aversive exchanges between parent and child and the child's potential role as abuse victim or abuser. This possibility is supported by interventions with antisocial children (e.g., Forehand, Wells, & Griest, 1980; Patterson, 1976), which indicate that planned reductions in the frequencies of daily parent-child relationship problems may also yield reductions in more molar indices of child antisocial behavior. Similarly, data reported by Wolfe, Aragona, Kaufman, and Sandler (1980) and Reid (in press) suggest that a curtailment of parental abuse may follow planned reductions in parent-child aversive exchanges. If this is correct, repeated aversive exchanges between parent and child may be part of an adverse process involving eventual episodes of harmful aggression. Just how this process "works" has been the focal point of several observational studies.

If parent-child aversive exchanges are part of an interbehavioral process of coercion, one might expect a large proportion of all exchanges in troubled dyads to be aversive in nature. However, even in the most serious clinical referrals for aggression, it is unusual to find more than 12% of the mother-child exchanges to be classified as aversive (Dumas & Wahler, in press). In fact, a survey by Reid (in press) indicates that approximately 90% of observed parent-child interactions in severely abusive families are either positive or neutral. Furthermore, analyses of these relatively small proportions of aversive exchange reveal that most of them are relatively brief in duration. Wahler, Hughey, and Gordon (1981) found that 90% of aversive contacts in clinic-referred mother-child dyads lasted 15 seconds or less, whereas Reid (in press) reported that 95% of these contacts in his clinic samples lasted for 11 seconds or less. The brief exchanges described in both studies involved irritating, but hardly abusive, behaviors such as "complaints," "aversive instructions," "whining," and "teasing."

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Microanalyses of mother-child aversive exchanges lasting more than 15 seconds reveal an interesting phenomenon, however. Patterson (1976) was the first investigator to point to the importance of lengthy aversive exchanges or "coercive chains" in abusive mother-child relationships. His analyses indicated that: (a) Longer and progressively more intense aversive episodes occurred in clinic-referred families compared to normal families; and (b) in the clinic-referred families, a mother's use of aversive consequences (e.g., yell, threaten) often led to the child's escalating aggression, whereas in normal families these aversive maternal responses actually decreased the likelihood of child aggression. Further investigations have since confirmed Patterson's findings and point to a puzzling stimulus function for mother aversive consequences in troubled families (Reid et al., 1981; Snyder, 1977; Wahler et al., 1981). In effect, why do maternal reprimands (apparently aversive stimuli) seem to function as positive reinforcers for some children?

Several investigators have found it useful to view the just described stimulus control process from an operant perspective. Thus, Patterson (1979) has suggested that aversive actions function to signal later positive or negative reinforcement in the dyad, whereas Dumas (1984a) and Wahler and Dumas (in press) have argued that these actions may serve this function when delivered in noncontingent fashion by either party. Both arguments are similar in their focus on aversive responding; however, they differ in how the reinforcement process is assumed to operate. In the first argument, referred to here as the compliance hypothesis, some aversive actions are viewed as demands or instructions directed by one member of the dyad to the other (e.g., child cries while pointing to a candy bar out of reach). The other member might respond to such aversive instructions by issuing counter aversive responses (e.g., mother shouts "No! Not before dinner.") or by complying (e.g., mother hands child the candy bar). As Patterson (1979) pointed out, compliance under these conditions can provide reinforcement for *both* individuals. In our example, the child's behavior is positively reinforced by mother's compliance and the mother's behavior is negatively reinforced by child termination of the crying, which is aversive to her. Similarly, aversive exchanges can provide negative reinforcement for both parties if an aversive instruction (e.g., mother commands child to put away toys) is met with a counter instruction (e.g., child picks up a toy and throws it across room [instruction = "you can't make me!"]) and, as a result, is not enforced. If, in our example, the mother fails to enforce her instruction, the child is likely to terminate his/her aversive protest. Thus, mother's "giving in" (or complying) and child's "protesting" are negatively reinforced. In both combinations of aversive instructions and compliance, it is easy to see how coercive chains of increasing aversiveness could be maintained.

The second argument on stimulus control, referred to here as the predictability hypothesis, has been described by Dumas (1984a) and Wahler and Dumas (in press). It is based on previously reported findings (Dumas, 1984b; Dumas & Wahler, 1985; Patterson, 1976; Snyder, 1977) suggesting that the aversive behavior of aggressive children may be related to mothers' inconsistent reactions to their children's behavior. In other words, some mothers often attend aversively to both problematic and prosocial child behaviors, thus providing their children with a relatively unpredictable interactional context. Laboratory work with animals (e.g., Badia, Harsh, & Abbott, 1979; Imada & Nageishi, 1982) and humans (Epstein & Roupenian, 1970; Staub, Tursky, & Schwartz, 1971) indicates that unpredictable contexts serve an aversive function. If this is correct, responses that are instrumental in reducing contextual unpredictability should be negatively reinforced. Specifically, the hypothesis predicts that any child response that is instrumental in making maternal attention more predictable is likely to be negatively reinforced by temporary escape from unpredictability, irrespective of the apparent valence (i.e., positive or aversive) of the maternal attention. In other words, the critical feature of this attention is its predictability or contingency when compared to the interactional context. As long as it exceeds its context in predictability, it is likely to be reinforc-

ing. For example, consider the following interactional context. Child is playing alone, while mother is sitting down, apparently "lost in thought." Careful observations indicate that her positive, neutral, and aversive responses to her child are rarely contingent on what the child is saying or doing. After a few minutes, the child smashes a toy. The mother intervenes immediately, first by lecturing the child, who begins to cry, and then by punishing the child. The predictability hypothesis suggests that the contingency of maternal aversive responses during this toy smashing episode will greatly exceed the contingency of her previous responses. If this is correct, maternal aversiveness, often a punishing stimulus for children, may act as a reinforcer in this context.

In summary, the compliance and uncertainty hypotheses assume that different stimulus control processes account for the maintenance of pathological aversive interchanges between parent and child. Both hypotheses provide reasonable accounts as to how these people might engage one another in potentially harmful bouts of coercion. However, with the exception of a few studies already mentioned, the ability of these processes to account for parent-child observational data has not been addressed. The study reported here was based on a correlational methodology and designed with guidelines from both of the previously discussed hypotheses. In particular, the coercive interactions of mother-child dyads in clinic referred families were expected to follow certain correlational arrangements. If maternal compliance is a functional part of coercive entrapment, such a reaction ought to be an observable component that covaries with the child's use of aversive instructions and with the child's level of aversive performance. The functional role of unpredictable mothering on the other hand, ought to be seen in a two-step process. Indiscriminate maternal responding should be positively correlated with the child's level of aversive performance; in addition, when long-duration episodes of child aversive behavior occur, such episodes should be associated with increased maternal predictability.

METHOD

Subjects

Three families referred to the Child Behavior Institute, University of Tennessee, for psychological treatment participated in this study.

Family 1. The C. family was comprised of two parents and a 4-year-old boy named Todd. Both parents were high-school graduates and father had completed 2 years of technical training. The father was employed in a skilled technical job; the mother was a homemaker. Low income ($14,000/year) required the family to live in a poor, inner area of the city. Parents admitted to marital strife, interference by Ms. C.'s mother, and harassment by a neighbor. According to the Protective Services referral, Ms. C. admitted to spanking Todd with a belt, leaving several bruises on his buttocks and thighs. Both parents described Todd as extremely demanding, prone to temper outbursts, and unable to entertain himself. This family met four of the seven "high risk" criteria proposed by Dumas and Wahler (1983) as predictors of unfavorable outcome in behavioral parent training.

Family 2. The B. family was comprised of a single mother and her two children, Eddie (age 12) and Carl (age 6), the target child. Ms. B. had an eighth-grade education, was unemployed, and lived in a government-subsidized housing project. Her income was restricted to food stamps and welfare stipends. She admitted to a daily life of strife through harassment by neighbors, her children, and a boyfriend. According to the Protective Services referral, Ms. B.'s boyfriend had abused her third and youngest child, leading to the man's arrest and the child's removal from the home. This man also admitted to spanking Carl "too hard." Ms. B. denied any abuse of her children, but admitted to "yelling a lot" and letting the children "push her around." This family met six of the seven criteria proposed by Dumas and Wahler (1983) as predictors of unfavorable treatment outcome.

Family 3. The I. family was comprised of two parents and two children, Sean (age 12), the target child, and Missy (age 6). Both parents were high-school graduates. The family lived on the father's self-employed income of $28,000 per year. Al-

though the parents were not exposed to strife or hardship in their middle class neighborhood, both reported serious marital problems. Ms. I. described herself as "lonely" much of the time and reported very few extra family contacts with friends or extended family members. She sought psychological help for Sean on the advice of the boy's school counselor but against her husband's wishes. She and the counselor described Sean as "immature" because of his chronic refusal to comply with instructions and his frequent complaints and demands for attention. This family was considered "high risk" on the Dumas and Wahler (1983) insularity criterion.

Measurement Procedures

Following an initial clinic interview, the three families were observed at home in extended baseline assessments of mother-child interactional problems for 4, 6, and 8 weeks, respectively. Two or three observations were conducted every week at times of day when, according to the mothers, interactional problems were most likely to occur. The observation rules required all family members present to remain within sight of the observer; television sets were to be turned off and incoming telephone calls kept very short; no extra family persons were allowed in the house. Mothers were informed that the observations were designed to assess parent-child interactional problems and they were asked to behave as they would in the absence of observers.

All observations were conducted by trained observers, using the Standardized Observation Codes—Revised (Dunn, Barker, & Wahler, 1981). This system provides a comprehensive picture of interactions between the target child and other family members. During each 30-minute observation session, the observer was signaled through earphones to observe and record code occurrences on paper forms segmented into 15-second intervals. Although a code could only be scored once per interval, there was no upper limit to the number of codes scorable in a single interval. All the codes relevant to this study are briefly defined in Table 1. On the basis of these codes, nine interactional measures were derived from each observation. They were:

1. *Child positive behavior.* This measure represented the percentage of observation intervals containing one or both of the codes "Child affection" and "Child compliance."

2. *Child aversive behavior.* This measure represented the percentage of observation intervals containing any or all of the codes "Opposition," "Rule violation," "Complaint," and "Physical complaint."

3. *Child aversive episodes.* To distinguish "short" versus "long" durations of child aversive behavior, two measures were obtained: (a) Single-interval episodes reflected the total number of child aversive behavior intervals separated by one or more intervals of nonaversive behavior, and (b) multiple-interval episodes reflected the total number of three or more consecutive intervals of child aversive behavior.

4. *Child aversive instructions.* This measure represented the percentage of observation intervals in which "Child instruction" was coded at the same time as one or more of the codes comprising child aversive behavior.

5. *Mother positive behavior.* This measure represented the percentage of observation intervals containing one or both of the codes "Mother facial and verbal affection" and "Mother physical affection."

6. *Mother aversive behavior.* This measure represented the percentage of observation intervals containing one or both of the codes "Mother aversive instruction" and "Mother aversive attention."

7. *Mother compliance with child aversive instructions.* This measure represented the percentage of observation intervals in which "Mother compliance" was coded in the same or immediately following interval as child aversive instruction.

8. *Mother indiscriminate attention.* This measure represented the average percentage of observation intervals in which: (a) Mother positive behavior was coded in the same or immediately following interval as child aversive behavior, or (b) mother aversive behavior was coded in the same

Table 1
Summary Definitions of the Observation Codes Used to Compute the Interactional Measures and Reliability of These Measures

Interactional measures		Reliability statistics
Child positive behavior		0.75
Affection	Scored for instances of smiling, touching, and other approval actions.	
Compliance	Scored for instances of compliance with adult instructions.	
Child aversive behavior		0.62
Opposition	Scored for instances of noncompliance with adult instructions.	
Rule violation	Scored for instances of violation of stated adult rules.	
Complaint	Scored for instances of verbal protest (e.g., whine, nag, cry).	
Physical complaint	Scored for instances of nonverbal protest (e.g., hit, push, kick).	
Child aversive instruction		0.77
Instruction	Scored for instances of demands or requests in which an act of compliance is judged possible; implied demands are scorable if the observer determines its feasible act of compliance.	
Aversive instruction	When child instruction is double coded for instances of child aversive behavior, these instructions are considered aversive.	
Mother positive behavior		0.77
Facial and verbal affection	Scored for instances of mother smiling or verbal approval.	
Physical affection	Scored for instances of mother touching, holding, and other approving physical actions.	
Mother aversive behavior		0.79
Aversive instructions	Scored as child instruction, but only when accompanied by verbal or nonverbal protest or disapproval example (e.g., "Get out of here!").	
Aversive attention	Scored for instances of mother protest or disapproval.	
Mother compliance with child aversive instructions		0.99
Compliance	Scored for instances of compliance with child instructions.	

Note. All reliability measures are based on the statistic *kappa*.

or immediately following interval as child positive behavior. This measure was taken as a *general* index of maternal indiscriminate attention to child aversive and positive behaviors.

9. *Mother indiscriminate attention during episodes of child aversive behavior.* This measure represented the percentage of observation intervals in which mother positive behavior was coded in the same or immediately following interval as child aversive behavior, computed separately for single-interval and multiple-interval episodes of that behavior. This more selective measure of maternal indiscriminate attention was crucial to an evaluation of the predictability hypothesis, which presumes a reduction in maternal indiscriminate attention during multiple-interval episodes of child aversive behavior.

Measurement Reliability

To assess the reliability of the Standardized Observation Codes—Revised, each mother-child dyad was observed twice in each study phase by two observers (the standard observer and a reliability checker) simultaneously. Measures of interval-by-interval agreement for each observer pair were obtained by tabulating (in 2 × 2 tables) the number

Table 2
Correlations Between Two Measures of Child Behavior and Four Measures of Maternal Behavior

	Dyad 1 (n = 10)	Dyad 2 (n = 12)	Dyad 3 (n = 14)	Dyad 1 (n = 10)	Dyad 2 (n = 12)	Dyad 3 (n = 14)
	Child aversive behavior			Child aversive instruction		
Mother compliance	−0.51	−0.33	−0.30	−0.44	−0.26	−0.43
Mother indiscriminate attention						
Overall	0.53	0.70	0.57	0.74	0.71	0.58
In single-interval episodes	0.39	0.42	0.47	0.47	0.41	0.64
In multiple-interval episodes	−0.39	0.12	0.16	−0.30	−0.01	0.27

of interval agreements and disagreements for occurrences and nonoccurrences of each behavior code that formed the basis of the behavior clusters described above. The totals of each corresponding table cell were then added and averaged to obtain one summary table for each behavior code. A measure of agreement which controls for chance agreements was obtained by computing a statistic known as *kappa* (see Hartmann, 1977, or Hubert, 1977, for rationale and computational procedures). Despite its stringency, this measure, which is presented in Table 1, was found to be satisfactory.

Data Analyses

The compliance and predictability hypotheses predicted different patterns of covariation among the variables just listed. An examination of these patterns was provided by plotting session scores on selected variables for each family. Measures of association among these variables were provided on each plot as indicators of the direction and magnitude of each pattern of covariation; however, in view of the descriptive nature of these measures, no statistical tests of significance were reported. In reference to the compliance hypothesis, the covariation between child aversive instruction and mother compliance with child aversive instruction was described. In reference to the predictability hypothesis, the covariations between child aversive behavior and overall mother indiscriminate attention on the one hand, and mother indiscriminate attention during single- and multiple-interval episodes of child aversive behavior on the other, were described.

RESULTS

Results of relevance to the compliance hypothesis are presented first. In all three families, more than 90% of all aversive exchanges were initiated by the children rather than by their mothers. Thus, they were not in response to maternal commands (i.e., counter-commands), but rather appeared aimed at extracting other forms of maternal compliance. In all three cases, informal notes made by the observers indicated that these children repeatedly demanded that their mothers play with them, give them things, or help them with tasks. As the first part of Table 2 indicates, however, these mothers rarely gave in to their children's aversive action, whether these were measured as overall child aversive behavior or as child aversive instruction. Rather, high levels of child aversiveness were associated with low levels of maternal compliance in all three families.

Turning to results of relevance to the predictability hypothesis, we found that all three mothers were indiscriminate in approximately 25% of their responses and that most of their noncontingent "mistakes" stemmed from their use of aversives during or following instances of child positive behaviors. Of greater interest, however, is that overall mother indiscriminate attention was positively associated with the three children's aversive action, again whether these were measured as overall child aversive behavior or as child aversive instruction. Furthermore, as predicted by the hypothesis, this positive association was also found when the children's aversive actions were correlated with mother

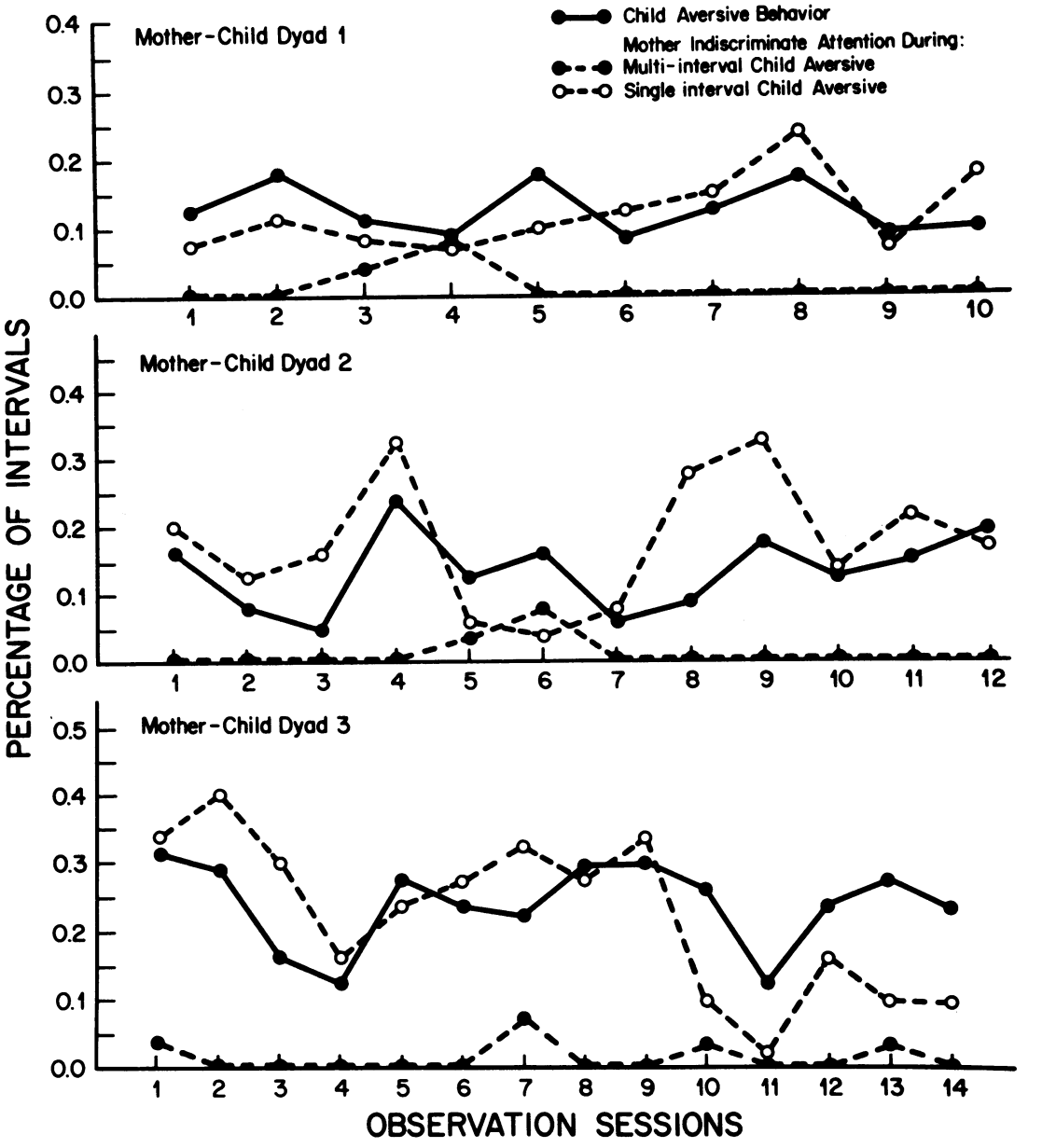

Figure 1. Relationships between child aversive behavior and two measures of mother indiscriminate attention for each mother-child dyad.

indiscriminate attention during or following single-interval episodes of child aversiveness, but was much reduced and, in some cases, became negative when it was correlated with indiscriminate attention during or following multiple-interval episodes of child aversiveness. In other words, all three mothers were fairly consistent (i.e., discriminating) in their sole use of aversive attention during and following their children's lengthy episodes of aversive actions.

Figure 1 presents two sources of detailed information already summarized in Table 2. As the two dotted lines in each graph indicate, the mothers were more likely to respond indiscriminately to

single-interval occurrences of child aversive behavior than to the longer multiple-interval occurrences of this behavior. Rarely did any of the mothers respond positively during the latter episodes of child aversive behavior. In addition, notice the covariation between maternal indiscriminate attention to single-interval child aversive behavior and the children's total output of aversive behavior. As indicated in the summary statistics of Table 2, these mother and child measures were positively correlated for all three dyads.

DISCUSSION

Contrary to the prediction of the compliance hypothesis, maternal compliance was not found to follow child aversive instructions reliably. The three mothers described here rarely acceded to their children's demands; moreover, the few observation sessions in which they did so were marked by relatively low proportions of child aversive instructions. It should be again noted, however, that virtually all of the children's aversive instructions were self-initiated, rather than in response to maternal instructions (e.g., "stop teasing your sister!"). It is possible that these mothers might have responded differently to their children's instructions if they had themselves initiated a large proportion of aversive exchanges through their own instructions. This possibility cannot be dismissed in view of our clinical impressions of these three mother-child dyads. All were very difficult treatment cases, as each mother was under chronic, multiple sources of aversive input (from spouse, extended family members, or boyfriend, as well as children) and had been experiencing severe childrearing problems for 3 years or more. All three mothers appeared to be chronically depressed and angry; each readily admitted feeling hopeless about her life situation and antagonistic toward her targeted child. Not surprisingly, these mothers rarely interfered with their children and seemed disinterested or detached in most of their interactions with them. However, when provoked into extended confrontations by their children, we were struck by the combative, almost siblinglike quality of their responses. In multiple-interval aversive episodes it was not unusual to hear these mothers use "name calling" (e.g., "you jerk!") or other derogatory language or even taunt their children (e.g., "you just try it!").

Although the findings reported here do not support maternal compliance as a stimulus control factor in the maintenance of child aversive behavior, it is possible that the few observed instances of compliance were only part of a much larger reinforcement schedule of intermittent compliance. To test this possibility, future research will need to measure mother-child interactions during much longer observation sessions than were used here.

The results provide tentative (i.e., correlational) support for the predictability hypothesis. On days when the three mothers offered relatively high proportions of indiscriminate attention, their children were apt to produce relatively high proportions of aversive responses. As expected under such unpredictable conditions, the children were also more likely to generate chains or sequences of aversive actions on these days, and the mothers to become far more discriminating in their use of social attention during these chains, generally, matching aversives with aversives. Though these findings match the stimulus control process described by the predictability hypothesis, another, perhaps more parsimonious, interpretation is possible. It could be argued that mothers who must attend to relatively high rates of child aversive behavior could be expected to make a relatively high number of "mistakes" in how they responded to such behavior. These mistakes might be expected to be more likely during sporadic (single-interval) episodes than during longer and more dependable (multiple-interval) episodes of child aversiveness. Future research will need to clarify the *directionality* of this influence process by asking whether maternal indiscriminate attention sets the occasion for child aversive behavior, or vice-versa. Again, this will probably require observation sessions of much larger duration than the 30-minute assessments of the present study.

The findings reported here illustrate the complex and elusive quality of coercive mother-child

relationships more than the adequacy of a single hypothesis in accounting for the maintenance of such relationships. Although the tentative support of the predictability hypothesis is encouraging, the maintenance factors in coercive relationships are by no means clearly understood. For example, aversive events might "elicit" aggression from the individual who experiences these events (see Azrin & Holz, 1966). Should a mother's disapproval serve an eliciting function rather than either of our hypothesized reinforcement functions, a correlational or experimental test of this possibility would be difficult to imagine outside the laboratory. Nevertheless, such multifaceted searches for stimulus control must be pursued if we are to understand why some coercive relationships are so persistently maintained.

Treatment procedures for coercive children are based, at least in part, on one's understanding of maintenance processes in the targeted deviant behaviors. Currently used behavioral interventions usually entail teaching the parent to time-out or ignore a child who behaves aversively, while offering approval or material rewards for the child's positive behavior (see O'Dell, 1985). This strategy makes sense given both of the maintenance hypotheses considered in this study. That is, the coercive child's aversive behavior could not extract compliance from a well taught mother, and this same mother would offer her new parenting skills on a systematic or predictable basis. However, the two hypotheses differ in their additional implications for treatment. A mother's entrapment through complying with her child's demands is understandable given the aversive nature of these child stimuli and their likely termination following mother compliance. Likewise, a child's coercive behavior is understandable if it functions to extract maternal compliance or predictability within the midst of uncertainty. These stimulus control issues are focused on the mother-child dyad, a critical unit in presently used treatment strategies. On the other hand, the question of why these mothers were indiscriminate in attending to their children may require us to look beyond the dyadic unit. As the correlational study by Dumas (in press) suggests, a troubled mother's tendency to behave indiscriminately with her coercive child might be a function of stressful encounters between herself and other adults. Should these encounters prove to be "setting events" (Kantor, 1959) for a mother's haphazard child care, then treatment procedures must be broader than those presently encompassed in parent training. Some means of attenuating the setting event function would need to be added to conventional intervention strategies.

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Received March 4, 1985
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